AMERICAN PUBLIC GAS ASSOCIATION

June 3, 2013

Ms. Brenda Edwards, U.S. Department of
Energy, Building Technologies Program, Mailstop EE-2J, 1000
Independence Avenue SW., Washington, DC 20585-0121.

RE: Energy Conservation Program for Certain Industrial Equipment: Energy Conservation Standards for Commercial Warm Air Furnaces; Request for information (RFI). (Docket No. EERE-2013-BT-STD-0021)

Dear Ms. Edwards:

The American Public Gas Association (APGA) is pleased to submit comments in response to the request for information (RFI) regarding energy conservation standards for commercial warm air furnaces issued by the U.S. Department of Energy (DOE), Office of Energy Efficiency and Renewable Energy (EERE), in the Federal Register on May 2, 2013.[1]

APGA is the national association for publicly-owned natural gas distribution systems. There are approximately 1,000 public gas systems in 36 states and over 700 of these systems are APGA members. Publicly-owned gas systems are not-for-profit, retail distribution entities owned by, and accountable to, the citizens they serve. They include municipal gas distribution systems, public utility districts, county districts, and other public agencies that have natural gas distribution facilities. For more information, please visit www.apga.org.

I. DOE should update Electric Warm Air Furnace Standards

The current Commercial Warm Air Furnaces standard covers gas-fired and oil-fired warm air furnaces that are industrial equipment and that have a capacity (maximum rated input) of 225,000 Btu per hour or more. Almost all commercial warm air furnaces are installed outdoors on rooftops. There are basically two varieties of such systems: gas heating/electric cooling and electric heating/electric cooling (where the electric heating is primarily from electric resistance).

In this RFI, DOE is proposing only an update to the standard that covers gas-fired and oil-fired warm air furnaces. DOE is not concurrently proposing rulemaking for commercial equipment whose heating capacity is energized by electricity. This will lead to price increases for gas heating/electric cooling systems, but not electric heating/electric cooling. Such price increases will certainly result in fuel switching away from natural gas and towards less efficient (on a full

[1] *Request for information regarding energy conservation standards for commercial warm air furnaces,* 78 FR 25627, (May 2, 2013).

fuel-cycle basis) electric resistance heat. Consequently, such gas to electric fuel switching would lead towards a lessening of competition and an increase of regulated emissions and global warming gasses.

Should DOE determine that the current Commercial Warm Air Furnaces standards need to be amended, APGA urges DOE to amend the applicable electric standards.

II. DOE should use Full-Fuel Cycle Energy Metrics

Should DOE determine that the current Commercial Warm Air Furnaces standards need to be amended, APGA urges DOE to adopt a full-fuel cycle approach in the new standard.

APGA believes that energy descriptors for appliances should reflect full-fuel-cycle energy metrics that allow for the comparison of products for which there is a choice of fuels. A source or full-fuel-cycle analysis examines all impacts associated with energy use, including those from extraction/production, conversion/generation, transmission, distribution, and ultimate energy consumption. The current DOE practice of using site (or point-of-use) measurement fails to account for the energy losses expended between the processes of energy extraction through delivery to the point of final consumption, when comparing energy use intensity of optional fuels. Site-based measurement of energy consumption and efficiency favors technologies that result in the consumption of greater quantities of raw energy, and therefore, emission of greater quantities of pollutants.

Full-fuel-cycle metrics enable a more comprehensive analysis of the total energy usage and environmental impacts associated with of appliance energy efficiency standards. Full-fuel-cycle metrics would also level the playing field for appliances that can use different fuels by providing a proper basis for comparing energy usage and efficiency. By way of example, for appliances that use natural gas most of the energy losses and emissions occur at the point of use. The overall natural gas delivery system, from extraction and production, through processing, transportation, and delivery to end use is relatively efficient – approximately 92% of the energy produced reaches the consumer as usable energy, where electricity is only about 32% efficient, with about 64% lost in generation.[2]

For these reasons, The National Academies (of Science, of Engineering, Institute of Medicine, and the National Research Council), in a report dated May 15, 2009, recommended that the DOE consider moving over time to the use of a full-fuel-cycle measure of energy consumption in its conservation standard program. In particular, the National Academies recommended that for appliances for which there is a choice of fuel, efficiency ratings should be calculated using an extended site energy metric pending a transition to the use of full-fuel-cycle energy metrics.[3] In

[2] U.S. Energy Information Administration, *Annual Energy Review 2011*, Table 2.1b.

[3] The National Academies Press, 2009. National Academy of Sciences Letter dated May 15, 2009 at p. 12 ("Recommendation 3: For appliances for which there is a choice of fuel, such as storage water heaters and heating equipment, efficiency ratings should be calculated using the extended site measure of energy consumption until DOE/EERE can consider and complete a transition to the use of the full-fuel-cycle measure of energy consumption.").

response to the National Academies' report, DOE issued a Statement of Policy (SOP) announcing its plans to adopt full-fuel-cycle energy analyses into their Energy Conservation Standards Program.[4] Specifically, DOE stated its intention to use full-fuel-cycle energy measures of energy use and emissions, rather than site energy measures.

Natural gas is the cleanest, safest, and most useful of all fossil fuels. The inherent cleanliness of natural gas compared to other fossil fuels, as well as strong domestic supply projections and superior efficiency of natural gas equipment, means that substituting gas for the other fuels will reduce the emissions of the air pollutants that produce smog, acid rain and exacerbate the "greenhouse" effect. Natural gas is the lowest CO2 emission source per BTU delivered of any fossil fuel. Using gas-fired appliances for homes instead of electric ultimately reduces greenhouse gas emissions by one-half to two thirds. Simply put, increasing the direct-use of natural gas is the surest, quickest, and most cost-effective avenue to achieve significant reductions in greenhouse gases and therefore should be a critical component of any green buildings certification program. One consequence of using a site-based metric is to promote fuel switching in the design decision away from more full-fuel-cycle energy efficient and lower greenhouse gas emitting gas technologies toward more site energy efficient electric technologies. To promote energy efficiency and lower greenhouse gas emissions, a full-fuel-cycle metric should be used.

It is the position of APGA that DOE should follow-through on its commitment to incorporate a meaningful use of full-fuel-cycle measures of energy use and emissions. To overcome the site-based shortcomings identified the National Academies and to remedy the disconnect between DOE's current methodology and the robust full-fuel cycle approach recommended, APGA strongly urges DOE to employ a secondary energy descriptor to capture full-fuel cycle efficiency in line with the recommendations from the National Academies.

The National Academies made recommendations that are applicable to the implementation of a secondary descriptor. For example, inclusion of a descriptor adjustment calculation for the current AFUE rating to allow:

- Direct comparability of gas furnace efficiencies to heat pump HSPFs in terms of site energy consumed, and

- Scaling of these site ratings to full fuel cycle efficiencies using these site energy consumption calculations for comparison of these competing products on a full fuel cycle basis.

This linkage is essential to address one of the National Academies' recommendations since simply adding full fuel cycle information to the furnace rating procedures will only allow comparisons between gas and electric furnaces, which are rated on AFUE, while ignoring comparisons to heat pumps. Since a comparison between AFUE and HSPF (i.e., on either a site

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[4] *Energy Conservation Program for Consumer Products and Certain Commercial and Industrial Equipment; Statement of Policy for Adopting Full-Fuel-Cycle Analyses Into Energy Conservation Standards Programs*, 76 Fed. Reg. 51281 (Aug. 18, 2011).

energy or full fuel cycle energy basis) cannot be done, end-use consumers are either not well-served or not served at all by the current descriptors.

While The Energy Policy and Conservation Act, 42 U.S.C, § 6293, requires the measurement of energy use on a "site" basis, it does not preclude the use of additional or secondary energy descriptors that provide useful information to consumers on the energy consumption and environmental impacts of their appliance choices. Moreover, implementing an extended site or full-fuel-cycle energy descriptor would not require alteration of any test methods for appliances. Rather, a simple calculation can be done using the primary (site-based) energy descriptor as an independent variable.

Below is an illustration of how that calculation would be performed to establish full-fuel-cycle energy descriptors for certain natural gas and electric furnaces:

Comparison of Site vs. Source
Warm Air Furnace
AFUE

Energy Source	**AFUE $_{site}$**	**AFUE $_{full\ fuel\ cycle}$**
Natural Gas:	0.80	0.73
Natural Gas:	0.90	0.83
Electric Resistance:	0.98	0.31

Adding this adjustment for site and full fuel cycle comparability within the furnace standard is an important opportunity for DOE to honor its intention to use full-fuel-cycle energy measures of energy use and emissions, rather than site energy measures, as stated in its 2011 SOP.

APGA thanks the Office of Energy Efficiency and Renewable Energy for its consideration of these comments.

Respectfully submitted,

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